WHEN THE WOOD GROWS DRY. pdf

1: Illustration: Michael Silver: When the Wood Grows Dry, magazine story illustration

Fungus is the cause of dry rot, which is one of the most serious defects that wood can develop. The fungus grows by consuming wood fiber, and the wood becomes soft and punky. When dry rot occurs.

Many people consider chicken of the woods to be a delicacy, with their meaty texture and flavor reminiscent of lemon and chicken. A small percentage of those who try it experience nausea, vomiting, swollen lips, or other gastrointestinal unpleasantness. Some general cooking tips: This mushroom becomes harder and more brittle with age, so fresh young specimens are best. Look for caps that are juicy with a tender texture. Ideally they should ooze clear liquid if you slice them. I prefer to clean these mushrooms by just wiping them down with a damp cloth. You can store them in a paper bag in the refrigerator before cooking, but no longer than a week. Cut your chicken fungi into smaller pieces for easier cooking. Go easy on the amounts of cooking oil unless specifically deep-frying. These mushrooms can absorb a lot of oil during cooking, making them sit in your stomach like a lead balloon. You can use the sulphur shelf in place of chicken or tofu in any recipe. They also work well in curries, rice recipes, risottos, casseroles, or any egg dish. Chicken of the Woods Recipe This easy chicken of the woods recipe was adapted from Italyville. Serve it as an appetizer, side dish, or add it to meat or pasta. Warm the olive oil over medium heat and add the garlic. Let it cook for one minute. Add the mushrooms and cook for 10 minutes, stirring occasionally as they turn a vibrant orange. Pour in the white wine and cook for another 5 minutes. Add the tomato sauce and let the whole thing simmer for another minutes. Try to get your hands on a specimen and tweak some recipes of your own. Picture 3 taken by George Chernilevsky, and is in the public domain.

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2: The Chicken of the Woods Mushroom

The different species of the chicken of the woods mushroom are both saprotrophic (feeding on dead trees), and parasitic (attacking and killing live trees by causing the wood to rot). Whatever their method of feeding, you'll always find them growing on or at the base of a living or dead tree.

Discussion[edit] Dry rot is the term given to brown rot decay caused by certain fungi that deteriorate timber in buildings and other wooden construction without an apparent source of moisture. The term is a misnomer [2] because all wood decaying fungi need a minimum amount of moisture before decay begins. Chemically, wood attacked by dry rot fungi is decayed by the same process as other brown rot fungi. An outbreak of dry rot within a building can be an extremely serious infestation that is hard to eradicate, requiring drastic remedies to correct. Significant decay can cause instability and cause the structure to collapse. The term dry rot, or true dry rot, refers to the decay of timbers from only certain species of fungi that are thought to provide their own source of moisture and nutrients to cause decay in otherwise relatively dry timber. However, there has been no published experimental evidence to support the phenomenon. Both species of fungi cause brown rot decay , preferentially removing cellulose and hemicellulose from the timber leaving a brittle matrix of modified lignin. At relative humidities below 86 percent, growth of Serpula lacrymans is inhibited, but it can stay dormant at relative humidities down to 76 percent. An explanation of the term "dry rot" circles around boatyards periodically. In the age of wooden ships, boats were sometimes hauled for the winter and placed in sheds or dry dock for repair. The boats already had some amount of rot occurring in the wood members, but the wood cellular structure was full of water making it still function structurally. As the wood dried out, the cell walls would crumble. In other words, the wood was already rotten and as the boat dried, the wood collapsed and crumbled, causing the workers in the yard to determine it was "dry rot", when in fact, the wood had been rotten all along. Some have suggested the importance of these fungi providing their own source of nutrients as being more significant than providing an adequate source of moisture. Schilling [7] suggests efficient nutrient translocation and utilization, notably nitrogen and iron, may be more distinctive in these species than water translocation. Water translocated in this fashion carries nutrients to the extremities of the organism; not, as is sometimes inferred, to simply render dry timber wet enough to attack. Coggins [8] goes into more detail about water movement in Serpula lacrymans. The perpetual saturation of wood with water also inhibits dry rot, as does perpetual dryness. However, its historical usage dates back to the distinction between decay of cured wood in construction, i. This contributes to the Etymological fallacy that dry rot requires less or no water than other species that use the brown rot decay mechanism. Eventually, the term dry rot came to apply to only one or two fungi[citation needed] the main one being Serpula lacrymans , in the majority of texts dealing with the subject, predominantly from the United Kingdom. It has even been proposed to use the term water-conducting fungi in the category of brown rot rather than dry rot. Treatment of dry rot timber[edit] This section needs additional citations for verification. Please help improve this article by adding citations to reliable sources. Unsourced material may be challenged and removed. August See also: Dry rot treatment Dry rot can be very difficult to remediate unless all of the decayed wood and spores are removed. In some cases after this is done, decayed areas can be treated with special epoxy formulations that fill-in the channels of the damaged wood, killing the rot and improving structural integrity. However, this type of treatment can actually promote decay [16] in wood in exterior service unless the epoxy application is designed to shed water [17]. Epoxy or other polymers will trap moisture behind the patch, causing more decay in the surrounding previously uninfected zones unless the repaired zone is protected from recurring water events. Commercial ethylene glycol commonly sold as antifreeze and many other toxic diffusible compounds can diffuse into the wood to kill the fungus, but they also can diffuse out of wood that is repeated wetted. Diffusion of these toxic compounds out of the wood, and into to surrounding soils and plants is not appropriate from a toxicity or environmental standpoint [18] , and these types of treatment are not recommended for wood in-service. Certain copper compounds, such as copper naphthenate , are available as a brushable solution and are frequently used when dry-rot damage is repaired by splicing in new wood; after

removal of bulk rotten wood the remaining original surface is saturated with such a compound typically green in color before application of the new wood. It is therefore recommended, by companies that sell this service, that where dry rot is found, plaster and wall coverings should be stripped back to a metre past the infestation in all directions and the whole area treated. However, given that dry rot attacks only wet timber, common sense should dictate that plaster need not be removed where there is no timber or any timber is dry outside the zone of wetting that caused the outbreak [citation needed]. Identifying the source of water and allowing the affected timbers to dry will kill dry rot, as it is a fungus and requires water as all fungi do. This will not, however, kill any spores left behind, which will remain viable and cause the rot to return upon wetting. Damaged wall with fungal growth.

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3: How to Grow Wood Ferns | Garden Guides

Dry rot needs moisture in order to grow inside wood; therefore, it needs continued moisture to spread. When dry rot affects a piece of wood, the rotting part will often fall off. At this point, more of the wood is exposed, which allows dry rot to continue to spread.

And you must cope with this movement in every project you build. This free water as the sap is sometimes called accounts for 72 percent of the total moisture content, although this percentage may vary from species to species. The remaining 28 percent saturates the wood fibers in the cell walls. This bound water in the fibers causes them to swell, just as a sponge swells when you wet it. As the green wood dries, the free water evaporates first, then the bound water. Wood dries to an average moisture content of between 4 and 11 percent, depending on the area of the country, but it never really comes to rest! The amount of bound water in the wood continually changes with the amount of moisture in the surrounding atmosphere. On the average, wood gains or loses about 1 percent moisture content for every 5 percent change in the relative humidity. In green wood, free water fills the cell cavities and bound water saturates the fibers in the cell walls. As it dries, the free water evaporates first, then the bound water. Once the wood has been dried, the moisture content never again rises above 28 percent its fiber saturation point from the effects of humidity alone. For this to happen, the wood must be immersed in water. The relative humidity is the ratio of the actual moisture in the air absolute humidity to the maximum amount of moisture the air will hold at its present temperature. The warmer the air, the more moisture it will hold. The wood fibers swell as they absorb moisture and shrink as they release it, causing the wood to expand and contract. In the Northern Hemisphere, relative humidity increases in the summer and decreases in the winter. And due to the effects of heating and air conditioning, the relative humidity is generally different indoors than out. Additionally, the relative humidity may vary from one building to another if the indoor temperatures differ. Consequently, wood tends to move with the seasons or whenever you change its location. The grain structure causes it to move differently in three different directions. Wood is fairly stable along its longitudinal direction, parallel to the grain. Green lumber shrinks only 0. Wood moves much more across the grain, tangent to the growth rings. Green lumber shrinks as much as 8 percent in this direction. But it shrinks only half as much 4 percent in the radial direction, extending out from the pith along the radius of the growth rings. For this reason, quartersawn lumber is more stable than plain-sawn lumber. Quartersawn lumber is cut radially and moves only half as much across its width as plain-sawn lumber, which is cut tangentially Wood is fairly stable along its length, moving only 0. However, on the average it moves 8 percent tangentially and 4 percent radially. If the annual rings run side to side in square stock, the stock will shrink to a rectangle. If the rings run diagonally from corner to corner, the stock will become diamond-shaped. Round stock becomes oval as the tangential diameter shrinks more than the radial diameter. Plain-sawn lumber tends to cup in the opposite direction of the growth rings because the outside face the face farthest from the pith shrinks a little faster than the inside face. In quartersawn lumber, both faces shrink equally and the board remains flat. And there are other forces that may cause a board to move or change shape. Internally stressed wood called reaction wood moves when you cut it. Cutting relieves some of the stress, and the wood reacts by changing shape. This is quite different from normal wood movement, however. Once the stress dissipates, it no longer affects the wood. Because of the difference in tangential and radial movement, boards change shape as they expand and contract. The way in which they change depends on how they are cut from the tree. You must anticipate the movement when fitting drawers and doors, inserting panels in frames, and dozens of other operations. This will accommodate an annual change of 8 percent moisture content â€” much more than is common in most areas. Also consider the time of year. Wood shrinks to its smallest dimension in the winter and swells to its maximum in the summer. The wood in winter projects will expand; the wood in summer projects will contract. In the spring and fall, remember that the wood will expand half your total movement allowance and contract the other half. Quartersawn lumber is more stable than plain-sawn, expanding only half as much across its width. Additionally, quartersawn boards remain relatively flat, while plain-sawn boards tend to cup when they

expand and contract. To reveal the information in a "Superphoto," first enlarge it and then move the cursor over it.

4: Ash - the best wood to grow for firewood? (woodland forum at permies)

Dry rot (Serpula lacrymans):Almost certainly the most 'feared' of the rots, and sometimes called the 'cancer of a house'. However, like ALL wood rotting fungi, it requires water to become initiated, to grow and survive.

I wanted to take advantage of the warm ish weather here in NNJ over the weekend, and started carrying it to its permanent home on my deck. A bunch of pieces had some white fuzzy stuff growing on the bark; and a few pieces had some more ugly stuff growing on the wood itself. See pictures None of that was there when I originally stacked it. The "real ugly" ones I put aside for now, but I used a stiff brush on the pieces with the white fuzzy parts before stacking. A few questions for the pros here: What did I have growing on my wood? Did I make a mistake just brushing the white stuff off? Thanks, Click to expand Welcome to the forum Jim. Sorry to say this but oak is one of the best firewoods you can buy except That is 3 years after it has been split. Then it, like all firewood, needs to be stacked out in the wind. Some sunshine will help but wind is your best friend for drying wood. In addition to that, never expect that you can buy good dry firewood. They simply split the wood just before delivery. We never count time of drying until it has been split. Best advice is to buy a good quantity of wood of something other than oak. Ash is one of the best as it will dry nicely in a year. So get wood this year that you will burn next year. Even better is to get yourself 3 years ahead on your wood supply.

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5: Hunting and cooking chicken of the woods mushrooms

When the Wood Grows Dry, magazine story illustration October 25 x in. Signed lower right Good House Keeping.

Chicken of the Woods Laetiporus sulphureus, Laetiporus cincinnatus A huge flush of chickens! More than 50 lbs.! The color fades toward whitish tones with age. Both have a pleasant smell. Pores Bright sulphur yellow pores underneath for L. Flesh Yellowish white or orangey white. Spores Whitish spore print When and where to find them ecology Chicken of the woods are most likely to be found from August through October or later but are sometimes found as early as June. This is a mushroom that is likely to startle you. It grows on many types of dead or mature trees with hardwoods such as oak, or beech being more likely than conifers. They grow very fast. Usually when you find it there will be a lot. It can run almost like a faucet. Preparation Chicken of the woods can be one of the most variable mushrooms in terms of edibility. Some collections are great. Often with larger specimens, you may only want to use the more tender outer edges of the cap. Be sure to cook them thoroughly. They can have a lemony, chicken-like taste and texture or at least go well with chicken or chicken stock. A "wet" collection may not need to be finished with wine, water, or stock. A dry collection likely will. Overcooking can make your chickens dry. In most cases, a technique that adds liquid will be better. If you have ever cooked eggplant and wondered where the oil went, then this will be a similar experience. Marinating is required for grilling. Chicken of the woods may not be especially good at all if too large or mature. Usually smaller thin caps or thick and knobby caps as they first emerge from the wood are better. Chicken of the woods has an unusual texture that becomes sort of woody with age. There is anecdotal evidence that suggests L. A good young specimen can be used in many ways. It can be kept refrigerated for a week or more. Comments A few people have sensitivity to this one so if it is your first time just try a small amount. Chickens found growing on conifers should be treated with more caution and are best avoided. Not everyone likes the texture. Nothing else looks like it. Chickens can be used for dyeing wool, some fabrics, or paper and will yield an orange color with wool when ammonia is used as a mordant. They are fairly difficult to cook when waterlogged.

6: Fungus Repair on Wood | Home Guides | SF Gate

From a search, ash is considered to be the best wood to grow for firewood. Does anyone have an idea of how much land it would take, and how long per cord?. Ash is widely regarded as the best wood species to burn.

If mold is a problem in your home, you should clean up the mold promptly and fix the water problem. It is important to dry water-damaged areas and items within 24 to 48 hours to prevent mold growth. Why is mold growing in my home? Molds are part of the natural environment. Outdoors, molds play a part in nature by breaking down dead organic matter, such as fallen leaves and dead trees. But indoors, mold growth should be avoided. Molds reproduce by means of tiny spores; the spores are invisible to the naked eye and float through outdoor and indoor air. Mold may begin growing indoors when mold spores land on surfaces that are wet. There are many types of mold, and none of them will grow without water or moisture. Can mold cause health problems? Molds are usually not a problem indoors, unless mold spores land on a wet or damp spot and begin growing. Molds have the potential to cause health problems. Molds produce allergens substances that can cause allergic reactions , irritants and, in some cases, potentially toxic substances mycotoxins. Inhaling or touching mold or mold spores may cause allergic reactions in sensitive individuals. Allergic responses include hay fever-type symptoms, such as sneezing, runny nose, red eyes, and skin rash dermatitis. Allergic reactions to mold are common. They can be immediate or delayed. Molds can also cause asthma attacks in people with asthma who are allergic to mold. In addition, mold exposure can irritate the eyes, skin, nose, throat and lungs of both mold-allergic and non-allergic people. Symptoms other than the allergic and irritant types are not commonly reported as a result of inhaling mold. Research on mold and health effects is ongoing. For more detailed information, consult a health professional. You may also wish to consult your state or local health department. How do I get rid of mold? It is impossible to get rid of all mold and mold spores indoors. Some mold spores will be found floating through the air and in house dust. Mold spores will not grow if moisture is not present. Indoor mold growth can and should be prevented or controlled by controlling moisture indoors. If there is mold growth in your home, you must clean up the mold and fix the water problem. Who should do the cleanup? This depends on a number of factors. One consideration is the size of the mold problem. If the moldy area is less than about 10 square feet less than roughly a 3-foot by 3-foot patch , in most cases, you can handle the job yourself, following the guidelines below. If you choose to hire a contractor or other professional service provider to do the cleanup, make sure the contractor has experience cleaning up mold. Check references and ask the contractor to follow the recommendations of the EPA, the guidelines of the American Conference of Governmental Industrial Hygenists ACGIH , or other guidelines from professional or government organizations. Do not run the HVAC system if you know or suspect that it is contaminated with mold. This could spread mold throughout the building. If you have health concerns, consult a health professional before starting cleanup. Tips and Techniques The tips and techniques presented in this section will help you clean up your mold problem. Professional cleaners or remediators may use methods not covered here. Please note that mold may cause staining and cosmetic damage. It may not be possible to clean an item so that its original appearance is restored. Fix plumbing leaks and other water problems as soon as possible. Dry all items completely. Scrub mold off hard surfaces with detergent and water, and dry completely. Absorbent or porous materials, such as ceiling tiles and carpet, may have to be thrown away if they become moldy. Mold can grow on or fill in the empty spaces and crevices of porous materials, so the mold may be difficult or impossible to remove completely. Avoid exposing yourself or others to mold. Do not paint or caulk moldy surfaces. Clean up the mold and dry the surfaces before painting. Paint applied over moldy surfaces is likely to peel. If you are unsure about how to clean an item, or if the item is expensive or of sentimental value, you may wish to consult a specialist. Be sure to ask for and check references. Look for specialists who are affiliated with professional organizations. Avoid breathing in mold or mold spores. In order to limit your exposure to airborne mold, you may want to wear an N respirator, available at many hardware stores and from companies that advertise on the Internet. In order to be effective, the respirator or mask must fit properly, so carefully follow the instructions supplied with the respirator. Please note that the Occupational Safety and

Health Administration OSHA requires that respirators fit properly via fit testing when used in an occupational setting. Long gloves that extend to the middle of the forearm are recommended. When working with water and a mild detergent, ordinary household rubber gloves may be used. If you are using a disinfectant, a biocide such as chlorine bleach, or a strong cleaning solution, you should select gloves made from natural rubber, neoprene, nitrile, polyurethane or PVC. Avoid touching mold or moldy items with your bare hands. Goggles that do not have ventilation holes are recommended. Avoid getting mold or mold spores in your eyes. How do I know when the remediation or cleanup is finished? You must have completely fixed the water or moisture problem before the cleanup or remediation can be considered finished, based on the following guidelines: You should have completed the mold removal. Visible mold and moldy odors should not be present. You should have revisited the site s shortly after cleanup, and it should show no signs of water damage or mold growth. People should have been able to occupy or re-occupy the area without health complaints or physical symptoms. Ultimately, this is a judgment call; there is no easy answer. If wet or damp materials or areas are dried within 24 to 48 hours after a leak or spill happens, in most cases, mold will not grow. Clean and repair roof gutters regularly. Keep air-conditioning drip pans clean and the drain lines unobstructed and flowing properly. Keep indoor humidity low. Condensation can be a sign of high humidity. Actions that will help to reduce humidity: Vent appliances that produce moisture, such as clothes dryers, stoves, and kerosene heaters, to the outdoors, where possible. Combustion appliances, such as stoves and kerosene heaters, produce water vapor and will increase the humidity unless vented to the outside. Run the bathroom fan or open the window when showering. Use exhaust fans or open windows whenever cooking, running the dishwasher or dishwashing, etc. Actions that will help prevent condensation: Reduce the humidity see above. Use fans as needed. Cover cold surfaces, such as cold water pipes, with insulation. Testing or Sampling for Mold Is sampling for mold needed? In most cases, if visible mold growth is present, sampling is unnecessary. Surface sampling may be useful to determine if an area has been adequately cleaned or remediated. Suspicion of Hidden Mold You may suspect hidden mold if a building smells moldy but you cannot see the source, or if you know there has been water damage and residents are reporting health problems. Mold may be hidden in places such as the backside of dry wall, wallpaper or paneling, the top-side of ceiling tiles, or the underside of carpets and pads, etc. Other possible locations of hidden mold include areas inside walls around pipes with leaking or condensing pipes , the surface of walls behind furniture where condensation forms , inside ductwork, and in roof materials above ceiling tiles due to roof leaks or insufficient insulation. Investigating Hidden Mold Problems Investigating hidden mold problems may be difficult and will require caution when the investigation involves disturbing potential sites of mold growth. For example, removal of wallpaper can lead to a massive release of spores if there is mold growing on the underside of the paper. If you believe that you may have a hidden mold problem, consider hiring an experienced professional. Cleanup and Biocides Biocides are substances that can destroy living organisms. The use of a chemical or biocide that kills organisms such as mold chlorine bleach, for example is not recommended as a routine practice during mold cleanup. There may be instances, however, when professional judgment may indicate its use for example, when immune-compromised individuals are present. If you choose to use disinfectants or biocides, always ventilate the area and exhaust the air to the outdoors. Never mix chlorine bleach with other cleaning solutions or detergents that contain ammonia because toxic fumes could be produced.

7: Dry Rot & Brown Rot Problems | How Dry Rot Damages Wood in a Basement or Crawl Space

The white pored chicken seems to prefer growing from the roots of trees as opposed to directly from the sides of trees like the sulphur shelf, but I've found them growing in both situations, as you can see in pictures above and below.

Find your local contractor for a free estimate Contact your local dealer or call Find A Dealer Near You! Dry rot damage is often mistaken as a termite infestation. Dry rot also known as brown rot is one of the most damaging forces on household wood in the world. Approximately 20 billion board feet of timber is destroyed by wood rot in the United States each year-- far more than is damaged annually by fire! Replacement wood used to repair damage caused by wood rot accounts for almost 10 percent of the annual wood production in the U. In the United Kingdom, dry rot problems have been credited for dealing about million pounds worth of damage annually, and wood rot in general leads to about 17 billion dollars of damage each year in the United States. The Basement Systems international network of basement and crawl space contractors have a long history of experience in eliminating, preventing, and controlling dry rot infestations in homes throughout the United States, Canada, and the UK. If you have a dry rot problem in your home, call or e-mail us today to sign up for a free dry rot removal and control estimate! Get a Free Quote! However, dry rot occurs because of a variety of brown rot species, most notably the "true" dry rot fungus known as Serpula lacrymans. It originally got its name from the thought that it did not need water to survive and used a fermentation process to survive. This has long since been proven untrue, and it is now more appropriately called "brown rot", although the old name hangs on. While there is no official proof on the subject, many contractors have observed that dry rot also will not grow on wood with too much moisture. This can make treatment of dry rot complicated and expensive, and it can mean that future problems with dry rot can arise unless the cause of the problem is addressed first. The Bad News The Good News While dry rot is not the most common type of rot, it can deal serious damage to your home and endure conditions that are too dry for other types of rot to thrive. Dry rot fungus spores are present in most homes and can survive for several years, waiting for the right conditions to grow. Dry rot can pull moisture from moist areas to dry areas. It grows through mortar, concrete, masonry, and behind plaster. Dry rot problems in basements and crawl spaces can easily be solved by controlling moisture by sealing and dehumidifying the space. Treatment of the wood products such as boric acid is known to eliminate and prevent dry root fungi. A common first indication of dry rot in a home is the appearance of a "red brick dust". This is actually an accumulation of fungal spores that are covering the surface, waiting for the proper conditions to start to grow. An outbreak of dry rot commonly occurs several months after a household water event, such as flooding, bursting washing machine hoses, a failed water heater, or leaking pipes. Dry rot is also common in vented crawl spaces and basements with groundwater flooding. Dry rot is often not detected until the damage is already very significant. At this point, the following steps are recommended: Remove all wood that shows decay or visible fungus, as well as all wood within one meter of the visible decayed material. Remove all plaster, paneling, linings, and ceilings around the dry rot areas. Using a wire brush, clean off all surfaces, including metal and pipes, within 1. Clean up all dust and debris from the work. Apply a fungicide to all masonry, concrete, and exposed dirt in the area. Apply two coatings of fungicide to all wood surfaces within 1. Replace wood rot infected timbers with fungicide-treated wood. Preventing Dry Rot in a Basement: Remove all standing water sources, then install a plastic vapor barrier on the walls and floors. Install a self-draining dehumidifier powerful enough to dry the area. Seal off all crawl space vents and door covers. Encapsulate the crawl space with a crawl space liner, then install a self-draining crawl space dehumidifier. We can dry your basement or crawl space, eliminate flooding problems, and seal out outside humidity. We offer FREE, no-obligation dry basement and crawl space quotes in all our service areas. We can answer all your questions and point out the sources of humidity and moisture in your home. Call or e-mail us today to get started on a healthier, better-preserved home!

8: How to find (and eat) hen-of-the-woods mushrooms - www.enganchecubano.com

L. sulphureus usually are overlapping, fan-shaped flat caps growing as a single shelf or in attached bunches or rosettes on wood. L. cincinnatus tends to grow in a rosette at the base of the tree. The color fades toward whitish tones with age.

Even oven-dried wood retains a small percentage of moisture, but for all except chemical purposes, may be considered absolutely dry. The general effect of the water content upon the wood substance is to render it softer and more pliable. A similar effect occurs in the softening action of water on rawhide, paper, or cloth. Within certain limits, the greater the water content, the greater its softening effect. Drying produces a decided increase in the strength of wood, particularly in small specimens. The greatest strength increase due to drying is in the ultimate crushing strength, and strength at elastic limit in endwise compression; these are followed by the modulus of rupture, and stress at elastic limit in cross-bending, while the modulus of elasticity is least affected. There are no vessels "pores" in coniferous wood such as one sees so prominently in oak and ash, for example. The structure of hardwoods is more complex. In discussing such woods it is customary to divide them into two large classes, ring-porous and diffuse-porous. The rest of the ring, produced in summer, is made up of smaller vessels and a much greater proportion of wood fibers. These fibers are the elements which give strength and toughness to wood, while the vessels are a source of weakness. Examples of this kind of wood are alder , [17] basswood , [18] birch , [17] buckeye, maple, willow , and the Populus species such as aspen, cottonwood and poplar. The latewood will be denser than that formed early in the season. When examined under a microscope, the cells of dense latewood are seen to be very thick-walled and with very small cell cavities, while those formed first in the season have thin walls and large cell cavities. The strength is in the walls, not the cavities. Hence the greater the proportion of latewood, the greater the density and strength. In choosing a piece of pine where strength or stiffness is the important consideration, the principal thing to observe is the comparative amounts of earlywood and latewood. The width of ring is not nearly so important as the proportion and nature of the latewood in the ring. If a heavy piece of pine is compared with a lightweight piece it will be seen at once that the heavier one contains a larger proportion of latewood than the other, and is therefore showing more clearly demarcated growth rings. In white pines there is not much contrast between the different parts of the ring, and as a result the wood is very uniform in texture and is easy to work. In hard pines , on the other hand, the latewood is very dense and is deep-colored, presenting a very decided contrast to the soft, straw-colored earlywood. It is not only the proportion of latewood, but also its quality, that counts. In specimens that show a very large proportion of latewood it may be noticeably more porous and weigh considerably less than the latewood in pieces that contain less latewood. One can judge comparative density, and therefore to some extent strength, by visual inspection. No satisfactory explanation can as yet be given for the exact mechanisms determining the formation of earlywood and latewood. Several factors may be involved. In conifers, at least, rate of growth alone does not determine the proportion of the two portions of the ring, for in some cases the wood of slow growth is very hard and heavy, while in others the opposite is true. The quality of the site where the tree grows undoubtedly affects the character of the wood formed, though it is not possible to formulate a rule governing it. In general, however, it may be said that where strength or ease of working is essential, woods of moderate to slow growth should be chosen. In the case of the ring-porous hardwoods, there seems to exist a pretty definite relation between the rate of growth of timber and its properties. This may be briefly summed up in the general statement that the more rapid the growth or the wider the rings of growth, the heavier, harder, stronger, and stiffer the wood. This, it must be remembered, applies only to ring-porous woods such as oak, ash, hickory, and others of the same group, and is, of course, subject to some exceptions and limitations. In ring-porous woods of good growth, it is usually the latewood in which the thick-walled, strength-giving fibers are most abundant. As the breadth of ring diminishes, this latewood is reduced so that very slow growth produces comparatively light, porous wood composed of thin-walled vessels and wood parenchyma. The latewood of good oak is dark colored and firm, and consists mostly of thick-walled fibers which form one-half or more of the wood. In inferior oak, this latewood is much reduced both in quantity and quality. Such variation is very largely the result of rate of

growth. Wide-ringed wood is often called "second-growth", because the growth of the young timber in open stands after the old trees have been removed is more rapid than in trees in a closed forest, and in the manufacture of articles where strength is an important consideration such "second-growth" hardwood material is preferred. This is particularly the case in the choice of hickory for handles and spokes. Here not only strength, but toughness and resilience are important. Forest Service show that: The strength at maximum load is not so great with the most rapid-growing wood; it is maximum with from 14 to 20 rings per inch rings 1. The natural deduction is that wood of first-class mechanical value shows from 5 to 20 rings per inch rings 1. Thus the inspector or buyer of hickory should discriminate against timber that has more than 20 rings per inch rings less than 1. Exceptions exist, however, in the case of normal growth upon dry situations, in which the slow-growing material may be strong and tough. The width of the spring wood changes but little with the width of the annual ring, so that the narrowing or broadening of the annual ring is always at the expense of the summer wood. The narrow vessels of the summer wood make it richer in wood substance than the spring wood composed of wide vessels. Therefore, rapid-growing specimens with wide rings have more wood substance than slow-growing trees with narrow rings. Since the more the wood substance the greater the weight, and the greater the weight the stronger the wood, chestnuts with wide rings must have stronger wood than chestnuts with narrow rings. This agrees with the accepted view that sprouts which always have wide rings yield better and stronger wood than seedling chestnuts, which grow more slowly in diameter. Conversely, when there is a clear demarcation there may not be a noticeable difference in structure within the growth ring. In diffuse-porous woods, as has been stated, the vessels or pores are even-sized, so that the water conducting capability is scattered throughout the ring instead of collected in the earlywood. The effect of rate of growth is, therefore, not the same as in the ring-porous woods, approaching more nearly the conditions in the conifers. In general it may be stated that such woods of medium growth afford stronger material than when very rapidly or very slowly grown. In many uses of wood, total strength is not the main consideration. Monocot wood Trunks of the coconut palm, a monocot, in Java. From this perspective these look not much different from trunks of a dicot or conifer Structural material that resembles ordinary, "dicot" or conifer timber in its gross handling characteristics is produced by a number of monocot plants, and these also are colloquially called wood. Of these, bamboo , botanically a member of the grass family, has considerable economic importance, larger culms being widely used as a building and construction material and in the manufacture of engineered flooring, panels and veneer. Another major plant group that produces material that often is called wood are the palms. Of much less importance are plants such as Pandanus , Dracaena and Cordyline. With all this material, the structure and composition of the processed raw material is quite different from ordinary wood. Specific gravity The single most revealing property of wood as an indicator of wood quality is specific gravity Timell , [20] as both pulp yield and lumber strength are determined by it. Specific gravity is the ratio of the mass of a substance to the mass of an equal volume of water; density is the ratio of a mass of a quantity of a substance to the volume of that quantity and is expressed in mass per unit substance, e. The terms are essentially equivalent as long as the metric system is used. Upon drying, wood shrinks and its density increases. Minimum values are associated with green water-saturated wood and are referred to as basic specific gravity Timell Variation is to be expected. Within an individual tree, the variation in wood density is often as great as or even greater than that between different trees Timell Hard and soft woods It is common to classify wood as either softwood or hardwood. The wood from conifers e. These names are a bit misleading, as hardwoods are not necessarily hard, and softwoods are not necessarily soft. The well-known balsa a hardwood is actually softer than any commercial softwood. Conversely, some softwoods e. There is a strong relationship between the properties of wood and the properties of the particular tree that yielded it. The density of wood varies with species. The density of a wood correlates with its strength mechanical properties. For example, mahogany is a medium-dense hardwood that is excellent for fine furniture crafting, whereas balsa is light, making it useful for model building. One of the densest woods is black ironwood. Aside from water, wood has three main components. It is mainly five-carbon sugars that are linked in an irregular manner, in contrast to the cellulose. Lignin confers the hydrophobic properties reflecting the fact that it is based on aromatic rings. These three components are interwoven, and direct covalent linkages exist between the lignin

and the hemicellulose. A major focus of the paper industry is the separation of the lignin from the cellulose, from which paper is made. In chemical terms, the difference between hardwood and softwood is reflected in the composition of the constituent lignin. Hardwood lignin is primarily derived from sinapyl alcohol and coniferyl alcohol. Softwood lignin is mainly derived from coniferyl alcohol. The wood extractives are fatty acids , resin acids , waxes and terpenes. The extraction of these organic materials from wood provides tall oil , turpentine , and rosin. Wood fuel Wood has a long history of being used as fuel, [26] which continues to this day, mostly in rural areas of the world. Hardwood is preferred over softwood because it creates less smoke and burns longer. Adding a woodstove or fireplace to a home is often felt to add ambiance and warmth. Nearly all boats were made out of wood until the late 19th century, and wood remains in common use today in boat construction. Elm in particular was used for this purpose as it resisted decay as long as it was kept wet it also served for water pipe before the advent of more modern plumbing. Wood to be used for construction work is commonly known as lumber in North America. Elsewhere, lumber usually refers to felled trees, and the word for sawn planks ready for use is timber. Today a wider variety of woods is used: The churches of Kizhi , Russia are among a handful of World Heritage Sites built entirely of wood, without metal joints. See Kizhi Pogost for more details. New domestic housing in many parts of the world today is commonly made from timber-framed construction.

9: Chicken of the Woods/Sulphur Shelf (Laetiporus Sulphureus)- www.enganchecubano.com

Some kinds of wood can soak up several times their own weight of water, which is absorbed inside the wood by the very same structures that transported water from the roots of the tree to the leaves when the tree was a living, growing plant.

Interior doors should be kept open when air conditioning unless your heating and cooling system has a fully ducted return air system from each room of the home or unless specific and sufficient return air transfer pathways have been installed to ensure that closed interior doors do not result in space depressurization problems in the home. It is important that homes in hot, humid climates be pressurized slightly with respect to outdoors. The reason is fairly straightforward but not very obvious. If homes are depressurized with respect to the outdoors, then hot, humid outdoor air will be pulled through the very small air pathways that exist in all building envelopes walls, ceilings, floors, etc. To get from the outside of the home to the inside, this air often must follow circuitous pathways. For example, the air may enter the wall system high on the exterior where an outdoor light fixture is mounted and exit the wall system low on the indoors where an electrical outlet is located. If the home is air conditioned, the gypsum wallboard will be relatively cold â€" often colder than the dewpoint temperature of the humid outdoor air that must flow along that gypsum wallboard to that indoor electrical outlet. In Florida, it is not uncommon for summertime outdoor air dewpoint temperatures to be greater than 80 F! When this occurs, the colder gypsum wallboard can act just like that ice tea glass that "sweats" like crazy when you take it outdoors â€" it can condense the moisture out of the air that is flowing along its back surface on its way to the electrical outlet that is serving as its pathway into the air conditioned home. As illustrated in the figure below, this can result in moisture accumulation within the wallboard, which, in turn, can result in significant mold growth. The above wall diagrams from detailed computer simulations that model the combined impacts of heat, moisture and air transport 3 illustrate the importance of this air flow phenomena. The wall on the left bounds a space that is pressurized with respect to the outdoors and the one on the right bounds a space that is depressurized. The 2 Pa Pascal pressure gradient is very, very small â€" there are , Pa in one atmosphere. Clearly, it is the direction of the pressure gradient rather than its magnitude that is critically important here. You very much want your home slightly overpressurized in hot, humid climates so that dry, cool indoor air is pushed out of the home through the walls figure on left rather than have hot, humid outdoor air sucked into the home through the walls figure on right. Fortunately, it is relatively easy to pressurize a home â€" all that is necessary is that slightly more air be brought into the home than is exhausted. This normally requires a positive mechanical ventilation system. Things that may cause space depressurization in homes: Use ceiling fans in the summer â€" they allow you to be comfortable at higher air conditioning thermostat temperatures. Measure the RH in Your Home: If it does, you probably have problems either with leaks in your duct system or with your air conditioner unit itself â€" it could be too large, improperly charged or have insufficient air flow across the coil. Consult with a qualified air conditioning expert or mechanical engineer to determine the problem. The highest relative humidities in your home are likely to occur during mild weather when your air conditioner is not needed during the day. If your home is open to the outdoors during these periods, the materials in your home will adsorb moisture from this very humid air, again regardless of the temperature. Note the pink "splotch" at the bottom-center of this photo. It is the telltale warning sign that there is a likely mold "bloom" behind the vinyl wall covering. Moisture coming from outdoors can accumulate within the gypsum wallboard that is behind the vinyl wall covering. This normally occurs as a result of house depressurization where outdoor air is being sucked into the home through the very minute air pathways that exist in all normal wall systems. Where this problem occurs, outbreaks of mold often occur beneath the wall covering on the surface of the gypsum wallboard. This mold growth is normally characterized by pinkish to yellowish "splotches" on the vinyl wall covering. The moisture accumulation also can be severe enough to cause the gypsum wallboard to badly deteriorate and become "mushy. Positive pressurization of your home is one method of minimizing the potential occurrence of this problem. Otherwise, the part of the home containing the main return to the air handler unit will be "starved" for air, resulting in depressurization of this space with respect to the outdoors. If this occurs, outdoor air will be drawn through the

small pathways that exist in the exterior building envelope. This, in turn, can result in the rapid and abundant growth of molds â€" remember, the cellulose paper on gypsum wallboard makes an excellent, preferred mold food. If room doors are kept open, there will be sufficient return air pathways. However, if rooms doors are closed, the rule-of-thumb is that there should be about 50 square inches of "free" air transfer area for each cfm cubic feet per minute of supply air to the room. In this case, the term "free" means a simple, clear hole in the wall between the room and the remainder of the home. Most bathrooms, particularly tile in and around showers and tubs is regularly wet. As a result, most bathrooms grow mold and require regular cleaning. A weak solution of water and common household bleach can be used to regularly clean these areas and keep them free of mold. Low-noise bathroom fans are also recommended to remove excess moisture during periods when it is being generated by bathing or showering. See also exhaust fans. Avoid the use of these fans when it is humid outdoors, especially if you have noticed mold growth in your home or you are having trouble controlling the relative humidity in your home. In addition, avoid opening windows for long periods when it is humid outside e. Change your filters regularly and use pleated filters. Once a year get your air-conditioners professionally serviced. At that time make sure coils are clean, the condensate drains properly and that the drain pan has no mold. Do not landscape with hills that direct water flow towards the home. Keep down-spouts free of debris and direct outflow away from the home. Even small water leaks will cause mold problems. Rainwater leaks from improperly flashed windows, wall and roof penetrations and plumbing leaks should be promptly repaired. Periodically inspect under sinks and vanities for signs of water leakage. Use your nose and smell for "musty" or "earthy" odors â€" they usually indicate the presence of mold. Fix all water leaks promptly. Water damage from flooding or other major water intrusion in homes should be dried within 24 hours if at all possible. For severe flooding and severe water damage for more than 48 hours, a trained restoration professional should be consulted regarding cleanup procedures. Readers are also encouraged to consult the American Red Cross web site at the bottom of this page for further information. Single-pane, metal windows, which are common in Florida, generally condense water on the inside in winter. It is good practice to remove this condensation before it can run off and be absorbed by porous materials like wood casing or gypsum wallboard. Condensation can also occur on other surfaces in homes. If condensation is noticed on interior surfaces in summer, it may indicate a number of problems, including inability to control indoor humidity; air conditioner supply registers aimed directly at interior surfaces; duct leakage problems and pressure imbalances; or all of the above. If you notice indoor surface condensation during summer, you should contact a professional to help diagnose the cause. However, during early spring when the ground is still cool, it is quite possible to experience some condensation on tile floors on slab-on-grade homes that are open to the outdoors. This should not be a regular occurrence, but only something that occurs rarely. Make sure the clothes dryer vent goes all the way to the outside of the home, not to the crawlspace or to the inside of the attic or the house. The same goes for bathroom vent fans. It is also important for the kitchen range hood to vent to the exterior as well. Recirculating stove and kitchen vents provide no removal of stovetop moisture and inferior control of cooking related pollutants compared with venting completely to the outdoors. A major deterrent to the use of kitchen range hoods is noise. Choose an ultra-quiet, inline ventilation fan for your range hood. Kitchen and bath exhaust fans should only be used while cooking or using the bathroom to remove excess moisture generated by these activities. It is best practice to either have bathroom vent fans interlocked with the light switch so they do not get left on or have them switched by a manual timer that will shut them off after a period of time, or control them by humidistat. Fungi like the dark and closets are rarely supplied with conditioned air as a standard part of air conditioning systems. As a result it is not all that uncommon to have mold or mildew occur in closets, especially on leather. Leaving the closet doors open to provide more conditioned air circulation or leaving the closet lights on with the door closed so as to raise the temperature which lowers the RH can reduce these problems. Minimize live house plants, especially if you have any trouble controlling the relative humidity in your home. Often it is best to drain the condensate from the dehumidifier to a sink. Leave the AC system set off with this strategy, although ceiling fans on low speed might be set to circulate the air in rooms. Doors to rooms should be left open. This operates the cooling system constantly during the early morning hours when indoor coil temperatures will be achieved resulting in good

moisture removal. Set up the thermostat to 85 F during the rest of the day. This appears to work well in a majority of homes and under a wide range of weather conditions, although any significant duct leakage must be repaired.

WHEN THE WOOD GROWS DRY. pdf

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